Iowa Farm Science

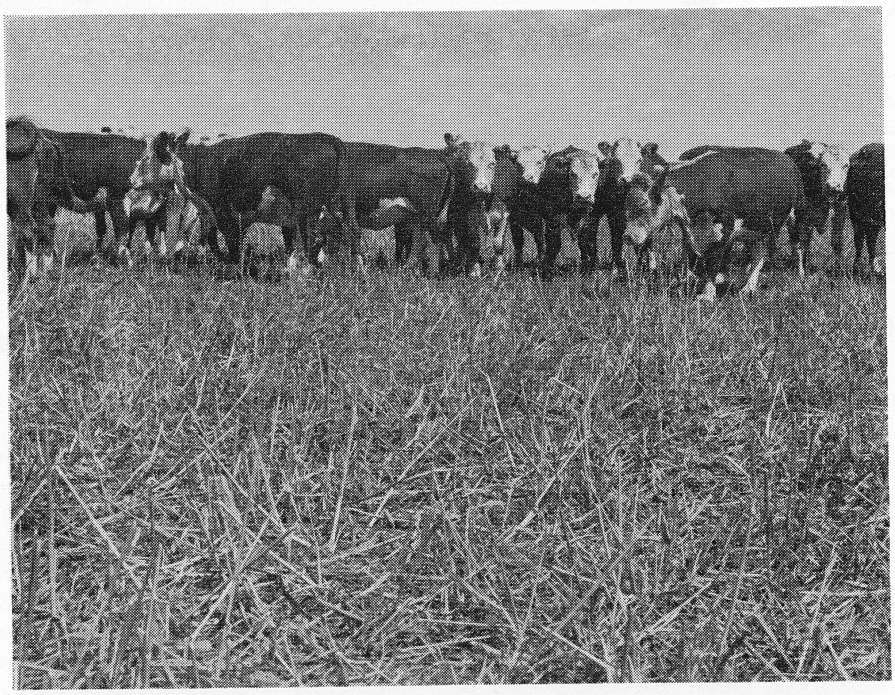
Volume 21 | Number 10 Article 3

4-1967

Sudan Provides Extra Forage for Beef

H. L. Self
Iowa State University

SUDAN PROVIDES



Extra Forage for Beef

by H. L. Self

BEEF CATTLE production in Iowa is now on the increase. And if the strong demand for beef continues with projected population increases, Iowa farmers may be able to cash in on this growing market.

Iowa has some natural advantages for beef cattle production. Its highly productive soils and adequate rainfall with a favorable distribution pattern are conducive to high forage yields. In addition, the state has large supplies of roughages, and farmers have a background in livestock production.

One problem of increasing cattle production in the state is that of a supplemental source of feed during the summer. The state has an abundance of natural bluegrass, but this grass often is dried by midsummer.

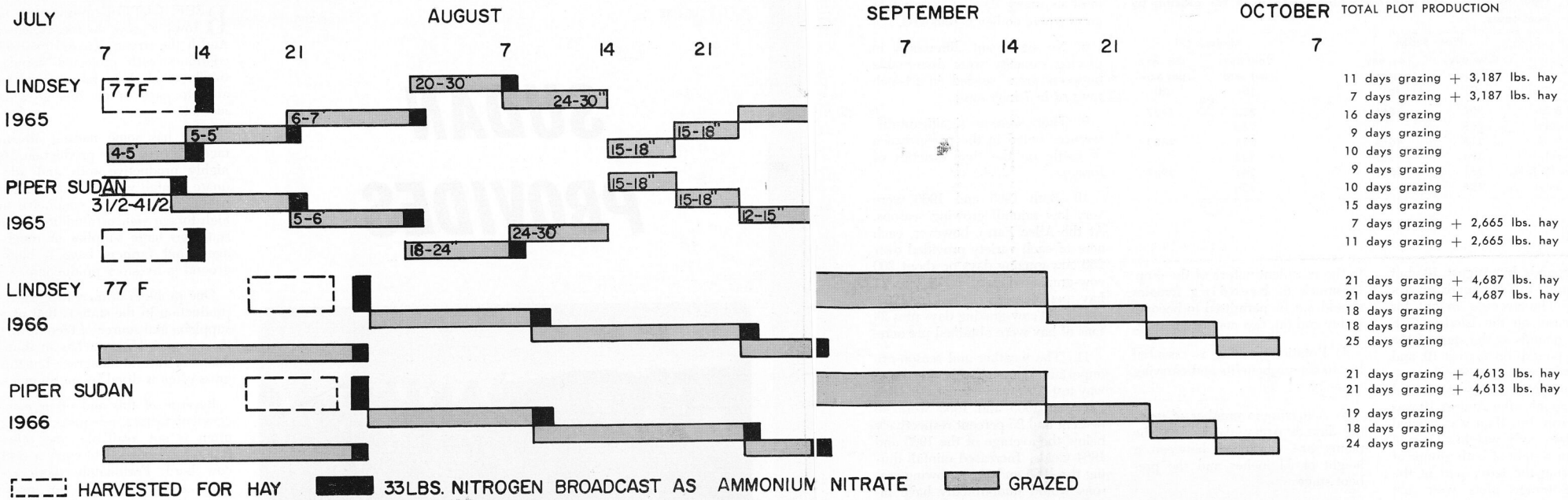
Because of this and other management factors, adequate grazing often is not available, and other forages are needed to carry a beef cow herd. Fortunately there are crops available to fill this need. Two of these have been tested at the Allee Experimental Farm in Buena Vista County the past two summers. Piper Sudan grass was used as the standard or control variety, and a new variety, Lindsey 77F, obtained by crossing sudan and a sorghum, was selected to represent the new varieties now available.

Although observations have been made at other outlying experimental farms, the data in this report were obtained from a 10-acre site of fairly level silt-clay-loam on the Allee Farm. The tests were conducted during the summers of 1965 and 1966. In May or early June of each year 100 pounds of 40-24-24 fertilizer were spread per acre and plowed under.

Five acres of the test site were seeded to Piper Sudan at the rate of 30 pounds per acre in 7-inch rows in 1965. The 5-acre plot of Lindsey 77F was seeded at the rate of 50 pounds per acre in 7-inch rows. In 1966, 2 acres of each variety were seeded in 21-inch

---

H. L. SELF is professor of animal science and professor in charge of outlying experimental farms.



rows and 3 acres were seeded in 7-inch rows.

In both years the 5-acre plot of each variety was subdivided with an electric fence into five one-acre areas to permit grazing by rotation. The entire area was seeded on the same date, therefore all areas were ready to graze at the same time. To avoid waste from over-maturity, the first growth on 2 acres of each variety was harvested for hay each year. The regrowth on those areas as well as the regrowth on the grazed areas was grazed again after the regrowth reached a minimum of 18 inches in height.

When the growth was removed from an area either as hay or by grazing, 100 pounds of 33.5-0-0 were applied broadcast as top dressing.

Grazing started in 1965 with 23 beef cows on a 1-acre area of each variety of forage on July 8 (41 days after planting). Piper averaged 3½ to 4½ feet high, and Lindsey 77F was 4 to 5 feet high (both in pre-boot stage) when grazing began. In 1966, 15 pregnant heifers were grazed in the same manner.

The groups of cattle were allowed to graze the 1-acre plots one at a time until the stem stubble height was only 4 to 8 inches and until a reasonably good job was done of cleaning up the lodged and downed forage. When this condition was reached the cattle were moved to the next 1-acre plot in the rotation.

During the early part of the 1965 study, each acre provided from 5 to 11 days of grazing for the 23 cows. By the time the group had grazed the three 1-acre plots in each variety one time, the two 1-acre plots that had been harvested for hay had acquired a regrowth of 15 to 30 inches of height in the Piper Sudan and 20 to 36 inches in the Lindsey 77F.

ISU AGRONOMIST Frank Schaller inspects the lush, thick growth of Lindsey 77F on the left at the time grazing was started. Behind Schaller is the Piper Sudan.

REGROWTH of Lindsey 77F after grazing is shown in the plot on the left. The plot on the right is grazed to the recommended level. For maximum feed utilization, cattle must be kept on the plots until downed and trampled feed (shown in the title photograph on page 7) is used.

From August 20 to August 23, 1965, supplemental feeding was necessary because forages did not grow due to dry weather. Each of the 23 cows received approximately 12 pounds of hay daily for a total of 1,080 pounds of the hay that had been harvested from the plots.

Between June 4 and June 7, 1965, 1.7 inches of rain fell, and between June 7 and August 29, 2.95 inches of rain was received in amounts ranging from 0.1 to 0.7 inches. Normal rainfall for June, July and August is 11.4 inches. A heavy rain on August 29 and unseasonably cool weather caused the grazing of the cattle to be stopped on August 31. The weather remained cool, and there was little growth of the pasture, therefore grazing was not resumed in September, and the study was terminated.

During the 1965 study, each group of 23 beef cows remained on the assigned 5-acre plot for a total of 53 days. This amounted to a total of 1,219 days of grazing on each 5-acre plot or 244 days of grazing for each acre in the test. In 1966, there were 305 cow days per acre both on Piper Sudan and Lindsey 77F. The data for both years are given in Table 1.

In 1965, the average weight of the 23 cows when started on the Piper Sudan plots on July 8 was 688 pounds. They attained a weight

TABLE 1. Yield of sudan and sudan-sorghum when used for grazing by beef cows.

	Piper Sudan		Lindsey 77F	
	Cow days per acre (G)[1]	Lbs. hay per acre (H)[2]	Cow days per acre (G)	Lbs. hay per acre (H)
1965 (G & H)	207	2665	207	3187
(G only)	268	...	268	...
1966 (G & H)	315	4613	315	4687
(G only)	305	...	305	...
Both years (G & H)	261	3639	261	3937
(G only)	286	...	286	...

[1] Grazed

[2] Harvested

of 758 pounds by August 10, but had dropped to 724 pounds by August 31. The average weight for the 23 cows on the Lindsey 77F was 705 pounds at the start of the test, 763 pounds on August 10, and 732 pounds on August 31. Obviously, the amount of forage consumed by the animals after August 10 was considerably less than was needed to maintain body weight. Despite the loss in weight of both groups of cows during the latter part of the test, the forage plots were not judged to have been overgrazed. (Table 2)

The weight gains in 1966 were more constant. On Piper Sudan the cattle increased from 707 pounds to 763 pounds, and on Lindsey 77F they increased from 711 to 788 pounds. (Table 3)

In addition to the grazing provided, 2,665 pounds of hay in 1965 and 4,613 pounds in 1966 were obtained from the Piper Sudan acres. Lindsey 77F yielded 3,187 pounds in 1965 and 4,687 in 1966. (Table 1)

The key to success in this type of rotation grazing is excellent management. Observations based on the research at the Allee Experimental Farm indicate that:

1. Proper seed bed preparation, fertilization and seeding are essential to good stands and rapid growth.

2. Each time a crop is removed by grazing or for hay, an application of nitrogen fertilizer will encourage regrowth.

3. Large weight increases in the cattle should not be expected, due to the succulent nature of the crop. Inasmuch as breeding females should not be permitted to become heavy and fat, this may be an asset.

4. Rotation grazing is essential for maximum benefits and carrying capacity.

5. A maximum number of grazing days is provided when the plants are consumed between a height of 24 inches and the preboot stage.

6. Planting the entire acreage to be grazed at the same time results in excess forage at the start of the grazing period. The excess can be removed as hay. However, drying is a problem because of the high moisture content and the physical makeup of the plant. Stepwise planting dates may need to be considered.

7. Regrowth from areas harvested for hay is rapid and provides almost as many days of grazing as areas where no hay is removed.

8. No significant differences in grazing capacity were discernable between areas seeded in 21-inch rows or in 7-inch rows.

9. There were no significant differences noted in the performance of cattle on the two varieties of forage.

10. Both 1965 and 1966 were very low rainfall growing seasons. At the Allee Farm, however, each acre of each variety provided over 250 cow-grazing days or about 200 cow-grazing days plus 1½ tons of hay per acre in 1965. In 1966, about 300 cow-grazing days plus 2¼ tons of hay were obtained per acre.

11. The weather and season are important factors. Yields of a three-way test variety of corn at the Allee Farm in 1965 and 1966 were 45 percent and 25 percent respectively below the average of the 1963 and 1964 yields. Increased rainfall during the 1965 and 1966 growing seasons would undoubtedly have increased forage yields, but the added moisture on the soil surface creates mud problems, amplifies forage losses due to trampling and souring, and disrupts the rotation grazing sequence.

Careful management practices, coupled with the excellent midsummer grazing provided by Piper Sudan grass or a sudan-sorghum cross, could help to improve Iowa's cow-calf competitive position and help feed a beef-hungry nation.

TABLE 2. Average weight of cows, summer grazing study, 1965. (23 cows in each of two groups.)

	Piper Sudan	Lindsey 77F
7-8-65 (start of grazing), lbs.	688	705
8-10-65, lbs.	758	763
8-31-65, lbs.	724	732
Total gain (55 days), lbs.	36	27
Av. daily gain, lbs.	0.65	0.50

TABLE 3. Average weight of pregnant yearling heifers, summer grazing study, 1966. (15 heifers in each of two groups.)

	Piper Sudan	Lindsey 77F
7-15-66 (start of grazing), lbs.	707	711
8-18-66, lbs.	709	724
9-27-66, lbs.	763	788
Av. daily gain (75 days), lbs.	0.76	1.03
Av. total gain, lbs.	56	77